Amendments

In response to the Office Action dated June 6, 2002, please amend the above identified patent application as follows:

In the Claims

Claim 1 is amended to reflect the limitations examiner expresses in her arguments. The applicant respectfully submits that the exclusion of no additional curative agents reflects the limitations deemed to distinguish the IPN formed by Doney from that of Comert et al. (which requires additional moisture to effect curing) and the need for a "curative for the epoxy resin" in the curable composition of Willett et al. The amendment distinquishes Doney over Comert et al. by the additional limiting statement of "a primary thermoplastic crystalline polymer" over "a prepolymer component" as stated in the Comert et al. patent. The "Condensed Chemical Dictionary" by Hawley, 10th edition, defines prepolymer as "an adduct or reaction intermediate of a polyol and a monomeric isocyanate, in which either component is in considerable excess of the other. A polymer of medium molecular weight having reactive hydroxyl and –NCO groups. It is used in the preparation of polyurethane coatings and foams." It is well known in the art that the formation of crystalline polymers requires close to one to one ratios of monomers and are "usually quite high molecular weights", therefore it follows that "thermoplastic crystalline polymers" are quite distinguished and apart from "prepolymers".

Claims 3, 5, 8, 9, and 12 are amended to reflect the limitations set forth in the Claim 1 amendments.

Claim 15 is amended to reflect the understanding of examiner's statement that "Claim 15 is indefinite in that it is unclear how the MDI can be definitive of the epoxy compound".

Claims 11, and 18-20 are withdrawn as these limitations are already drawn to amended claim 1.

Claims 23-26, 28-33, 35, 36, 37, and 51 are withdrawn in view of understanding the examiner's statement, "It is well settled that the evaluation of product-by-process claims is based on the product rather than on the process steps".

Claims 38-43, 45, 52, 54, 56-59 are amended to reflect examiner's statement, "It is well settled that the evaluation of product-by-process claims is based on the product rather that on the process steps".

1. (Amended) A thermoplastic composition formed by the melt blending of

   a. A primary thermoplastic crystalline polymer present in the amount of 60 to 99 weight percent.
   b. A secondary elastomeric polymer present in the amount of 1 to 40 weight percent.
   c. An isocyanate or epoxy compound present in the amount of 0.1 to 3.0 percent based on the weight of the primary thermoplastic crystalline polymer.
   d. A catalyst present in the amount of 0.001 to 5.0 percent based on the weight of the primary thermoplastic crystalline polymer.

2. The composition of claim 1 wherein an interpenetrating network is created with said thermoplastic composition.

3. (Amended) The composition of claim 1 wherein said blending results in the formation of at least one interpenetrating network within said thermoplastic composition.

4. (Withdrawn from consideration by examiner) The composition of claim 1 wherein said secondary polymer is incompatible for blending with said first polymer.

5. (Amended) The composition of claim 1 wherein said secondary polymer is compatible for blending with said primary thermoplastic crystalline polymer.

6. The composition of claim 1 wherein said components are dynamically blended.

7. The composition of claim 1 wherein said components are not dynamically blended.

8. (Amended) The composition of claim 1 wherein said secondary elastomeric polymer is dissimilar to said primary thermoplastic crystalline polymer.

9. (Amended) The composition of claim 1 wherein said primary thermoplastic crystalline polymer is polyethylene terephthalate.

10. The composition of claim 9 wherein an interpenetrating network is created within said thermoplastic composition.

11. (Cancelled) The composition of claim 9 wherein said first polymer comprises between 60 to 99 weight percent of the total blend.

12. (Amended)The composition of claim 1 where the primary thermoplastic crystalline polymer may be composed of several polymer types or mixtures such as would occur in using a recycled source of polymer.

13. (Withdrawn from consideration by examiner) The composition of claim 1 wherein said secondary polymer is a polycarbomide.

14. The composition of claim 1 wherein said catalyst is compounded into said secondary polymer in advance of blending.

15. (Amended) The composition of claim 1 wherein said isocyanate compound is methylenediphenylene diisocyanate ("MDI").

16. The composition of claim 1 wherein the number of isocyanate or epoxy compounds is one.

17. The composition of claim 1 wherein the number of isocyanate or epoxy compounds is more than one.

18. (Cancelled) The composition of claim 1 wherein said catalyst is present at a level of 0.001 to 5.0 weight percent, based on the weight of said first polymer.

19. (Cancelled) The composition of claim 1 wherein said secondary polymer used is in the range of 1 to 40 weight percent of the total blend.

20. (Cancelled) The composition of claim 1 wherein said isocyanate or epoxy compound used is in the range of 0.1 to 3.0 weight percent, based on the weight of said first polymer.

21. (Withdrawn from consideration by examiner) The composition of claim 1 further comprising vinyl siloxane as an oxygen barrier.

22. The composition of claim 1 further comprising at least one heat stabilizer component.

23. (Cancelled) A process for creating a thermoplastic composition, said process comprising melt blending of the following components at a melt temperature: a) a first polymer; b) a secondary polymer; c) at least one catalyst; and d) at least one isocynate or epoxy compound.

24. (Cancelled) The process of claim 23 wherein said thermoplastic composition contains at least one interpenetrating network.

25. (Cancelled) The process of claim 23 wherein said melt blending is dynamic.

26. (Cancelled) The process of claim 23 wherein said melt blending is not dynamic.

27. (Withdrawn from consideration by examiner) The process of claim 23 wherein said secondary polymer is incompatible for blending with said first polymer.

28. (Cancelled) The process of claim 23 wherein said secondary polymer is dissimilar to said first polymer.

29. (Cancelled) The process of claim 23 wherein said secondary polymer is compatible for blending with said first polymer.

30. (Cancelled)The process of claim 23 wherein said first polymer is polyethylene terephthalate.

31. (Cancelled) The process of claim 23 wherein an interpenetrating network is created within the thermoplastic composition.

32. (Cancelled) The process of claim 23 wherein said secondary polymer is from the group of aliphatic and aromatic polyolefins.

33. (Cancelled) The process of claim 23 wherein said secondary polymer is from the group: polyethylene, ethylene vinyl acetate or polypropylene.

34. (Withdrawn from consideration by examiner) The process of claim 23 wherein said at least one catalyst is a nucleating agent.

35. (Cancelled) The process of claim 23 wherein said secondary polymer is a polyamite.

36. (Cancelled) The process of claim 23 wherein said secondary polymer is an EVA copolymer.

37. (Cancelled) The process of claim 23 wherein said nucleating agent is polydimethyl siloxane.

38. (Amended) The composition of claim 1 wherein said at least one catalyst is selected from the group: dibutyltin dilaurate, maleate, precursors for phenolic resin, urea, melamine, dioctyltin dilaurate, sulphuric acid, sodium acetate, zinc chloride, carbomide, 5-phenyltetrazole, tert-butyl peroxy 2-ethylhexyl carbonate, tert-butyl peroxy-3,5,5-trimethylhexanoate, 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane, tert-butyl peroxybenzoate.

39. (Amended) The composition of claim 1 wherein the number of catalysts is one.

40. (Amended) The composition of claim 1 wherein the number of catalysts is more than one.

41. (Amended) The composition of claim 1 wherein said isocynate is selected from the group: 4,4'-phenylmethane diisocyanate (MDI), polymethylene polyphenyl,

polyisocyanate (PAPI).

42. (Amended) The composition of claim 1 wherein said epoxy is selected from the group: phenols, bisphenols, aromatic epoxy resin and cycloaliphatic epoxy resin.

43. Amended) The composition of claim 1 wherein the melt temperature is sufficient to ensure at least two phases have 3-dimensional spatial continuity resulting from the dynamic curing in the presence of said catalyst.

44. (Withdrawn from consideration by examiner) The process of claim 23 further comprising addition of a hydrocarbon gas during blending.

45. (Amended) The composition of claim 1 wherein said first polymer is from a scrap source.

46. (Withdrawn from consideration by examiner) The process of claim 23 wherein residues of barrier-coatings are present in said first polymer.

47. (Withdrawn from consideration by examiner) The process of claim 46 wherein said barrier-coatings are polyamides or florocarbons.

48. (Withdrawn from consideration by examiner) The process of claim 23 further comprising the addition of at least one hydrocarbon foaming agent during said melt blending.

49. (Withdrawn from consideration by examiner) The process of claim 48 wherein said hydrocarbon foaming agent is selected from the group of: isopentane, cyclopentane, carbon dioxide, n-pentane, nitrogen, butane, isohexane, heptane and chlorodifloro-methane.

50. (Withdrawn from consideration by examiner) The process of claim 23 wherein said catalyst is at least one nucleating agent selected from the following group: talc, calcium fluoride, sodium phenylphosphinate, aluminum oxide, titanium dioxide, finely divided polytetrafluoroethylene, teflon, or pyromellitic dianhydride (PMDA), sulfuric acid, iron oxide or any base earth metal groups.

51. (Cancelled) The process of claim 23 wherein said catalyst is added at a rate of between 0.001 to 5 weight percent, based on the weight of said first polymer.

52. (Amended) The composition of claim 1 further comprising the addition of at least one of the following additives during blending: antioxidants, stabilizers, dyes, flame-retardants, extenders, UV stabilizers and processing aids.

53. (Withdrawn from consideration by examiner) The process of claim 23 further comprising the addition of vinyl siloxane in a sufficient amount to form a surface oxygen barrier in the completed product.

54. (Amended) The composition of claim 1 wherein said melt blending is performed in an extruder.

55. (Withdrawn from consideration by examiner) The process of claim 54 further comprising coating said thermoplastic composition with an oxygen inhibiting barrier coat compatible with said first polymer upon its exiting the extruder.

56. (Amended) The composition of claim 1 wherein said melt blending is performed in an application unit.

57. (Amended)The composition of claim 1 wherein the application unit is an injection molder.

58. (Amended) The composition of claim 1 wherein said catalyst is present at a level of 0.001 to 10.0 weight percent, based on the weight of said first polymer.

59. (Amended) The composition of claim 1 further comprising the addition of at least one additional heat stabilizer during the melt blending.

60. (Withdrawn from consideration by examiner) The process of claim 59 wherein said catalyst and said additional heat stabilizer are compounded into an EVA carrier resin or vinyl base carrier resin

61. (Withdrawn from consideration by examiner) The process of claim 23 wherein said catalyst is compounded into an elastomer.

62. (Withdrawn from consideration by examiner) The process of claim 23 wherein said catalyst is compounded into a CPE polyolefin.

63. (Withdrawn from consideration by examiner) The process of claim 60 wherein the carrier resin is a polyolefin which comprises from 2 to 6 carbon atoms.

64. (Withdrawn from consideration by examiner) The process of claim 23 further comprising rapidly cooling the blended thermoplastic composition upon completion of the melt blending step.

65. (Withdrawn from consideration by examiner) The process of claim 48 wherein said at least one foaming agent changes phases from gas to liquid form upon cooling of the blended thermoplastic composition.

66. (Withdrawn from consideration by examiner) The process of claim 48 wherein said at least one foaming agent is present in the cooled thermoplastic composition in such a fashion that said thermoplastic composition can be foamed in secondary manufacturing.

67. (Withdrawn from consideration by examiner) The process of claim 64 wherein said blended thermoplastic is cooled in pellet form.

68. (Withdrawn from consideration by examiner) The process of claim 64 wherein said blended thermoplastic composition is cooled in sheet form.